REMARKS

INTRODUCTION

In accordance with the foregoing, claims 14, 25, 26, 38 and 39 have been cancelled. Claims 1-13, 15, 17-24, 27 and 29-37 are pending and under consideration.

OBJECTION TO THE SPECIFICATION

The specification was objected to because the description of the block boundary signal as a mono-multi-pulse signal as recited in claim 39 is not clear. Claim 39 has been cancelled.

Withdrawal of the foregoing objection is requested.

CLAIM REJECTION – 35 USC 112

Claim 39 was rejected under 35 USC 112, second paragraph as being indefinite. Claim 39 has been cancelled.

Withdrawal of the foregoing rejection is requested.

CLAIM REJECTIONS - 35 USC 102

Claims 1-13, 19-24 and 33-37 were rejected under 35 USC §102(e) as being anticipated by Owa et al. (US 6,564,009) (hereinafter, "Owa").

Owa discloses an apparatus for recording and/or reproducing data onto and/or from an optical disk and a method thereof. In Owa, as shown in FIG. 13, the recording and reproducing circuit 53 forms an ECC data block (182 bytes x 208 bytes) by 16 of the sector data blocks. That is, the recording and reproducing circuit 53 may arrange 16 of the sector data blocks each comprising 2048 bytes + 16 bytes by a unit of 172 bytes successively in the order of raster scanning and form error correction code (PI) comprising inner code in the horizontal direction and error correction code (PO) comprising outer code in the vertical direction. Furthermore, the recording and reproducing circuit 53 may interleave the ECC block and form a frame structure shown by FIG. 14. That is, the recording and reproducing circuit 53 may allocate a frame synchronizing signal (FS) of 2 bytes to each 91 bytes of the ECC data block of 182 bytes x 208 bytes thereby forming 412 frames by one ECC data block. The recording and reproducing circuit 53 may form data of 1 cluster having the frame structure shown in FIG. 14 and may allocate the one cluster to 4 continuous sectors. Owa, 18:50-18:67 and Figures 13 and 14.

In Owa, in the optical disk device 110, the wobble data ADIP is detected from the push pull signal PP obtained from the optical head 11 by which the position of irradiating laser beam is detected. A frame address detecting circuit 137 receives the push pull signal PP outputted from the optical head 11 and samples a wobble signal by a built-in band-pass filter. The frame address detecting circuit 137 decodes the wobble data ADIP by detecting a change in the phase of the wobble signal and executing predetermined signal processing and outputs the decoded wobble data ADIP to a system control circuit 134 and the cluster counter 138. Based upon the received decoded wobble data ADIP, the system control circuit 134 can specify generally the position of irradiating laser beam and the cluster counter 38 can recognize timing of frame synchronization. In the frame address detecting circuit 137, error detection processing may be carried out by error detection code CRCC allocated to each address data frame and the wobble data ADIP outputted after removing an error detection code and a reserve bit from the wobble data ADIP which has been determined correct. Owa, 41:6-41:31.

Claims 1-13

Claim 1 recites: "...generating a block boundary signal indicative of a boundary between error correction code (ECC) blocks using block address information recorded on the disk; detecting a phase difference between the block boundary signal and an encoding block synchronous signal; and detecting whether a violation of the boundary occurs according to a magnitude of the detected phase difference."

The Examiner contends that Owa discloses how to generate a block boundary signal. However, the detected thing according to the Examiner is a block address, which is expressed by a wobble signal, or a data frame, and not a boundary of blocks. In comparison to Owa, the block in claim 1 corresponds to a cluster, as shown in Fig. 45 of Owa, and not a data frame as in Owa. Just as a cluster consists of a plurality of data frames, a block in claim 1 may consist of a plurality of data frames or sectors.

The block boundary signal of claim 1 could correspond to the signal output by a cluster counter (Owa, Figure 6, reference numeral 38). However, no comparison of a block boundary signal and an encoding block synchronous signal is disclosed in Owa as is recited in claim 1.

Further, the synchronous signal of claim 1 corresponds to a cluster start point, shown at the bottom of Fig. 46 of Owa, and to a FS (Frame Sync) shown in Fig. 45 of Owa.

On page 3 of the Office Action, the Examiner states that Owa teaches how to detect a phase difference between a block boundary signal and the encoder block sync signal, as is recited in claim 1. The Applicant respectfully disagrees. In the present invention, the pahse difference indicates the difference indicates the difference between a block boundary signal and the encoder block sync signal. However, Owa only teaches how to obtain ADIP data by comparing the phase difference between two successive wobble signals. Binary states of ADIP data are represented by a phase difference between successive wobble signals. For instance, if the phase difference between the period of a wobble signal and the period of a successive wobble signal is 90 degrees, ADIP data is represented by logic 1; and if the pahse difference between the period of a wobble signal and the period of a successive wobble signal is –90 degrees, ADIP data is represented by logic 0. Thus, Owa does not teach how to detect the difference between a block boundary signal and the encoder block sync signal as in the present invention.

Claims 2-13 depend from claim 1 and are therefore believed to be allowable for the foregoing reasons.

Withdrawal of the foregoing rejection is respectfully requested.

Claims 19 and 20

Claim 19 recites: "...determining whether a violation of a block boundary occurs on a disk by determining a phase difference between a block boundary signal and an encoding block synchronous signal." Similar to the arguments presented regarding claim 1, no comparison of a block boundary signal and an encoding block synchronous signal is disclosed in Owa as is recited in claim 19.

Claim 20 depends from claim 19 and is therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejection is respectfully requested.

Claims 21-24

Claim 21 recites: "...a decoder generating a block boundary signal showing a boundary of ECC blocks based on the block address information recorded on the disk; an encoder adding an error correction code to data provided thereto, generating an encoding block, and outputting

the encoding block with an encoding block synchronous signal; and a boundary violation detector detecting a phase difference between the block boundary signal and the encoding block synchronous signal and detecting whether a violation of the boundary occurs according to a magnitude of the detected phase difference."

Claim 21 recites comparing the place where a physical block starts on a disk (the block boundary signal) with the place where ECC block data starts to be written on the disk (encoding block synchronous signal). As a result of the comparison, it is determined whether a block boundary is violated.

In contrast, Owa does not teach or suggest the above concept. The closest similarity discussed in Owa is to synchronize the generation of ECC block data with a signal based on counting a block address. However, in the method discussed in Owa, there may be inconsistency between the place where a block starts on a disk and the place where writing of ECC block data starts on the disk because operation of the disk drive may be disturbed during or after generation of ECC block data.

Claims 22-24 depend from claim 21 and are therefore believed to be allowable for at least the foregoing reasons. Further, claims 22-24 recite features that patentably distinguish over Owa. For example, claim 22 recites first and third window signals. Owa does not disclose a window signal.

Withdrawal of the foregoing rejections is respectfully requested.

Claims 33-37

Claim 33 recites: "...a boundary violation detector determining whether a violation of a block boundary occurs on a disk by determining a phase difference between a block boundary signal and an encoding block synchronous signal."

The Examiner contends that Owa discloses how to compare two timing signals, namely the block boundary signal and the encoding block synchronous signal recited in claim 33. However, the disclosure of Owa relates only to PLL, not to determination of violation of a block boundary.

In Owa, the phase comparator (135A) compares the phases of a wobble signal and a clock signal. The result of the comparison is fed to the VCO (135D) to control the frequency and

phase of the clock signal. In Owa, the wobble signal is not a block boundary signal as recited in claim 33, and the PLL is not used to determine whether a block boundary is violated. Thus, comparing a block boundary signal with a synchronous signal and determining whether a block boundary is violated is not disclosed or suggested in Owa.

Claims 34-37 depend from claim 33 and recite patentably distinguishing features of their own.

Withdrawal of the foregoing rejections is respectfully requested.

CLAIM REJECTIONS - 35 USC 103.

Claims 14, 25, 26 and 38 were rejected under 35 USC §103(a) as being unpatentable over Owa et al.

Claims 14, 25, 26 and 38 have been cancelled.

CLAIM REJECTIONS - 35 USC 102.

Claims 15, 17, 18, 27 and 29-32 were rejected under 35 USC §102(e) as being anticipated by Owa et al. in view of Ueki (US 6,678,236) (hereinafter "Ueki").

Ueki discloses a method and apparatus for recording information on a recording medium. Ueki further discloses that a first portion of the 1-ECC block data is recorded while the LPP-based recording timing signal is used as reference timings indicative of the boundaries between sectors or the heads of sectors. The timing corresponding to the starting edge of the pre-pit area PR and given by the LPP-based recording timing signal, the system controller 9 suspends the recording and changes the operation of the apparatus from the recording mode to the playback mode. Ueki, 26:45-26:55.

Claims 15, 17 and 18

Claim 15 recites: "...recording or stopping recording, according to the states of the first interrupt signal, the second interrupt signal, and the third interrupt signal."

Owa does not disclose the use of interrupts as is recited in claim 15. However, Ueki does not cure this deficiency in Owa. Ueki discusses delaying the writing of data to skip a pre-pitted area at the beginning of a sector. However, there is no description of a delay caused by violation of a block boundary in relation to a recording/reproducing circuit of Owa. Further, Owa

only discloses controlling recording/reproducing speed according to bit rate, not to block boundary violation.

Withdrawal of the foregoing rejections is respectfully requested.

Claims 27 and 29-32

Claim 27 recites: "...a recorder and a microprocessor recording or stopping recording, according to the states of the first interrupt signal, the second interrupt signal, and the third interrupt signal." Similar to the argument regarding claim 15, Ueki discusses delaying the writing of data to skip a pre-pitted area at the beginning of a sector not a delay caused by violation of a block boundary in relation to a recording/reproducing circuit of Owa, as is recited in claim 27.

Claims 29-32 depend from claim 27 and are therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejections is respectfully requested.

CONCLUSION

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

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Respectfully submitted,

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